

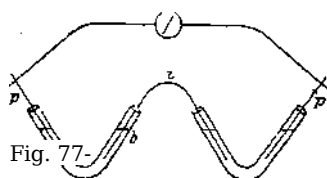
sharp and sudden. So if silver and copper be associated in a dilute solution of sulphuret of potassium, the copper will be chemically active and positive, and the silver will remain clean; until of a sudden the copper will cease to act,, the silver will become instantly covered with sulphuret, showing by that the commencement of chemical action there; and the needle of the galvanometer will jump through 180°. Two pieces of silver or of copper in solution of sulphuret of potassium produce the same effect.

1025. If metals be used which are inactive in the fluids employed, and the latter undergo no change during the time,, from other circumstances, as heat, etc. (826, 925), then no currents, and of course no such alterations in direction, are produced.

1026. *Where no chemical action occurs no current is produced.*

—This in regard to ordinary solid conductors is well known to be the case, as with metals and other bodies (855). It has also been shown to be true when fluid conductors (electrolytes) are used, in every case where they exert no chemical action, though such different substances as acid, alkalies

and sulphurets have been employed (831, 841,, 813, 817). These are very striking facts.



1027. *But a current will occur*

*the moment chemical action commences.*—This proposition may be well illustrated by the following experiment. Make an arrangement like that in fig. 77: the two tubes being charged with the same pure, pale, strong nitric acid, the two platinum wires *p p* being connected by a galvanometer, and the wire *i*, of iron. The apparatus is only another form of the simple arrangement, fig. 78, where, in imitation of a former experiment (624), two plates of iron and platinum are placed parallel, but separated by a drop of strong nitric

~~Fig. 77~~

acid at each extremity. Whilst in this state no current is produced in Fig. 78.

either apparatus; but if a drop of water be added at *b*, fig. 78, chemical action commences, and a powerful current is produced, though without metallic or any additional contact. To observe this with the

apparatus, fig. 77,  
a drop of water was put in at *b*. At first there was  
no chemical